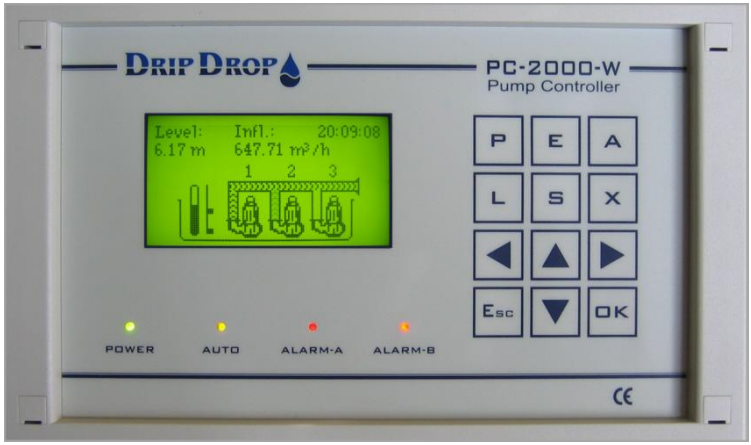
INSTALLATION MANUAL

Version: 0811-UK

PC-2000-W

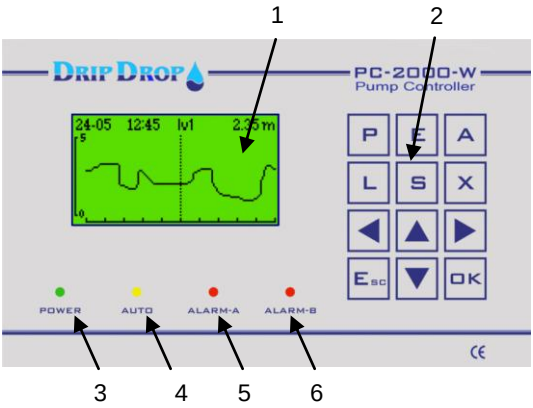


DripDrop AB • Pipers Väg 2C • SE-170 73 Solna, Sweden
Tel: +46 (0) 8 655 02 94 • Fax: +46 (0) 8 655 02 91
www.dripdrop.se • info@dripdrop.se

TABLE OF CONTENTS

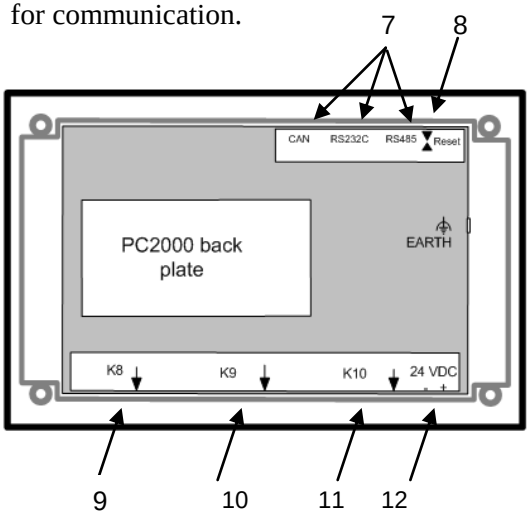
1 Description of PC-2000-W

PC-2000-W is the CPU and interface for DripDrop pump controller PC2000 for mounting in the front panel of the control cabinet. It has a graphical display to show data information and curves. There are 12 configuration and hotkeys and 4 diodes to indicate alarm status, power supply and pump "not in auto" position.



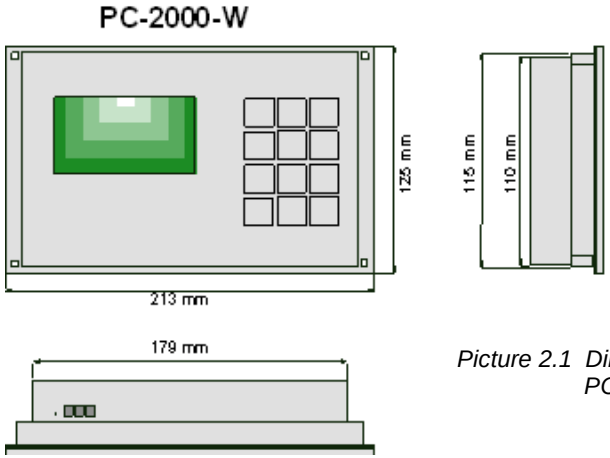
1. Digital graphic display
2. Operator keys for configuration and handling of information.
3. Power indication
4. Pump not in auto indication
5. A-alarm indictor
6. B-alarm indicator

On the back side of the unit there are a number of connectors for 24 VDC power, 3 band cable connectors, K8, K9 and K10 for signal transfer between PC-2000-W and the I/O device ADA-2000-E. There is also RS232, RS485 and a CAN-bus port for communication.



7. Communications ports
8. Reset button
9. Band cable (CSD20/1,5) connection (digital signals)
10. Band cable (CSD26/1.5) connection(digital signals)
11. Screened cable CSA14E/1.5 connection (analogue signals)
12. Power supply 24 VDC

2 Dimensions and mounting



Picture 2.1 Dimensions of PC-2000-W.

Mounting of the unit in the cabinet front door is made by cutting a rectangular hole, 203x115 mm. The unit is then fixed with two metal brackets and 4 screws on the backside of the front door.

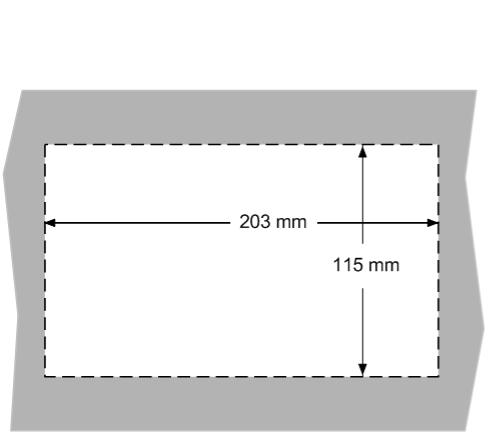


Figure 2.2 shows the required cutting dimensions for panel mounting.

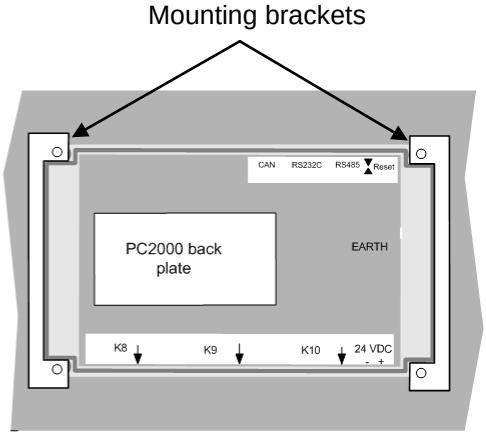
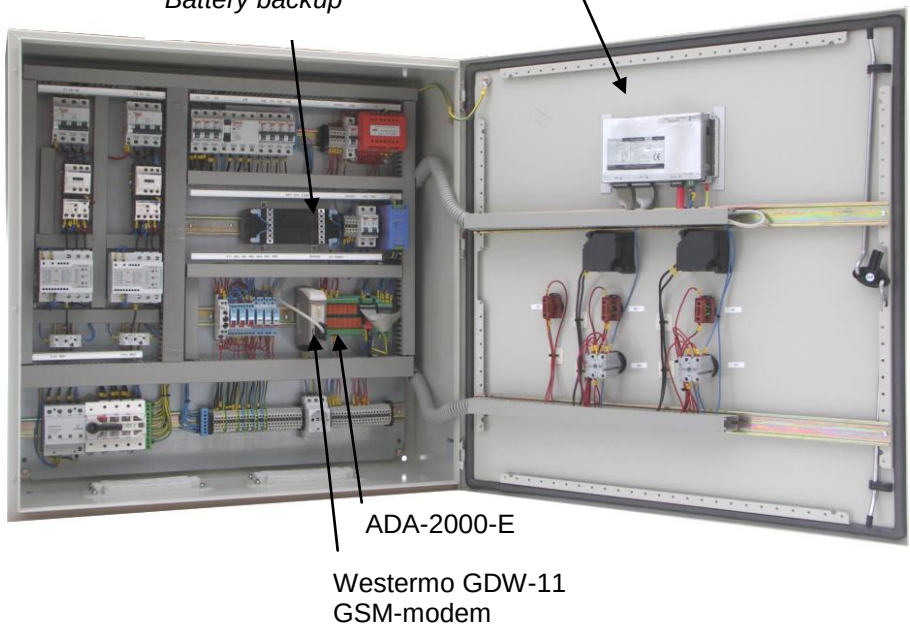


Figure 2.3 shows the back of the PC-2000-W when mounted in the door.

Example: PC-2000-W mounted in a DripDrop standard 2-pump cabinet.

Picture 2.4 Shows front door of standard DripDrop 2 pump cabinet with PC-2000-W, ampere meters, man-0-auto switch, pump and alarm indication.



Picture 2,5, shows the inside of a standard DripDrop electrical panel for 2 pumps with PC-2000-W mounted in the door and the I/O type ADA-2000-E mounted on a DIN-rail. This cabinet is equipped with a Westermo GDW-11 modem and a backup battery.

3 I/O-signals

I/O No.		Type	Signal	Notes
AI	1	Level signal (Pressure signal)	4-20 mA	
AI	2	Flow signal	4-20 mA	
AI	3	P1 Motor current / Running confirm.	4-20 mA	
AI	4	P2 Motor current / Running confirm.	4-20 mA	
AI	5	P3 Motor current / Running confirm.	4-20 mA	
AI	6	P4 Motor current / Running confirm.	4-20 mA	
AI	7	Attendance alarm / Intruder alarm	4-20 mA	

DI	1	Low level switch	NO	mostly NC
DI	2	High level switch	NO	
DI	3	Overflow switch	NO	
DI	4	P1 Not in auto (M-0-A)	NO	mostly NC
DI	5	P1 Motor protection	NO	
DI	6	P1 Thermo protection	NO	mostly NC
DI	7	Internal alarm 1, External block. P1	NO	
DI	8	P2 Not in auto (M-0-A)	NO	mostly NC
DI	9	P2 Motor protection	NO	
DI	10	P2 Thermo protection	NO	mostly NC
DI	11	Internal alarm 2, External block. P2	NO	
DI	12	P3 Not in auto (M-0-A)	NO	mostly NC
DI	13	P3 Motor protection	NO	
DI	14	P3 Thermo protection	NO	mostly NC
DI	15	Internal alarm 3, External block. P3	NO	
DI	16	P4 Not in auto (M-0-A)	NO	mostly NC
DI	17	P4 Motor protection	NO	
DI	18	P4 Thermo protection	NO	mostly NC
DI	19	Internal alarm 4, External block. P4	NO	
DI	20	Block all pumps / Phase failure	NO	

CI	1	Flow meter / Rain meter (Pulses)	--	
CI	2	Energy meter / Flow meter (Pulses)	--	

AO	1	Analogue out (4-20 mA)	4-20 mA	Mirror of AI 1- 7
AO	2	Analogue out (0-10 V)	0-10V	Mirror of AI 1- 7

ADA-2000 – Terminal connections

DO	1	ND1	C1	P1 Start/ Stop	NO	
DO	2	ND2	C2	P1 Multipurpose out	NO	
DO	3	ND3	C3	P2 Start/Stop	NO	
DO	4	ND4	C4	P2. Multipurpose out	NO	
DO	5	ND5	C5	P3 Start/Stop	NO	
DO	6	ND6	C6	P3 Multipurpose out	NO	
DO	7	ND7	C7	P4 Start/Stop	NO	
DO	8	ND8	C8	P4 Multipurpose out	NO	
DO	9	ND9	C9	Agitator/ Flushing	NO	
DO	10	ND10	C10	Not used	NO	
DO	11	ND11	C11	Attendance alarm	NO	For alarm horn –Alarm is sent.
DO	12	ND12	C12	Alarm (not ackn.)	**NC**	
DO	13	ND13	C13	Alarm (active)	**NC**	
DO	14	ND14	C14	Multipurpose out	NO	
DO	15	ND15	C15	AI2 Alarm output	NO	
DO	16	ND16	C16	Modem reset	**NC**	Interrupts the power to GSM-modem.

4 Electrical connection

4.1 Power supply 24 VDC or 27,2 VDC

PC-2000-W is powered with a stabilised 19.2-30VDC supply, same power supply as the CPU unit ADA-2000-E. If battery backup is used the power supply must be able to deliver 27.2VDC in order to recharge the battery. Depending on how much load there is on the 24VDC circuit we recommend to use a 24VDC battery with 1.3-3Ah capacity.

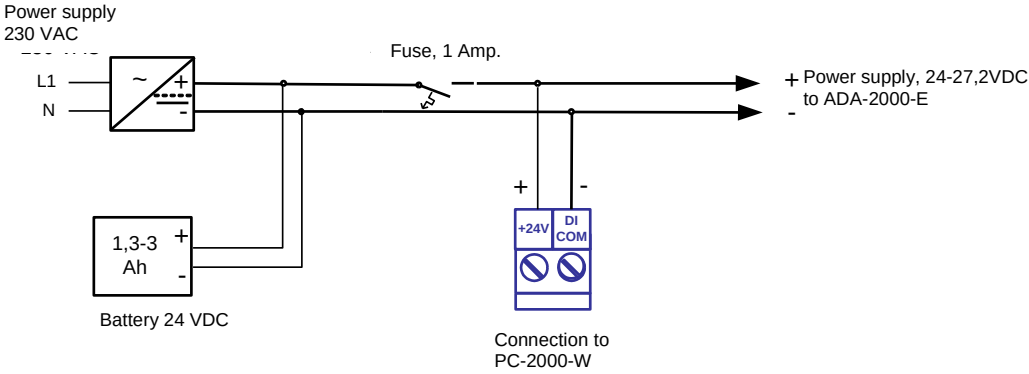


Figure 4.1 Shows a power supply with or without battery backup. Protect the 24 VDC circuit with a 1 or 2 ampere fuse.

If the utility power has problems with transients due to atmospheric charges etc. a surge protection device should be installed at the 230 VAC supply line.
If the utility power has problems with unstable supply voltage (over/under voltage) it is recommended to install a stabilizer device at the 230 VAC supply line

4.2 Signal connection between PC-2000-W and ADA-2000-E

To connect the signals from the I/O unit ADA-2000-E with the operator unit PC-2000-W, two band cables for the digital signals and one screened round band cable for analogue signals are used.

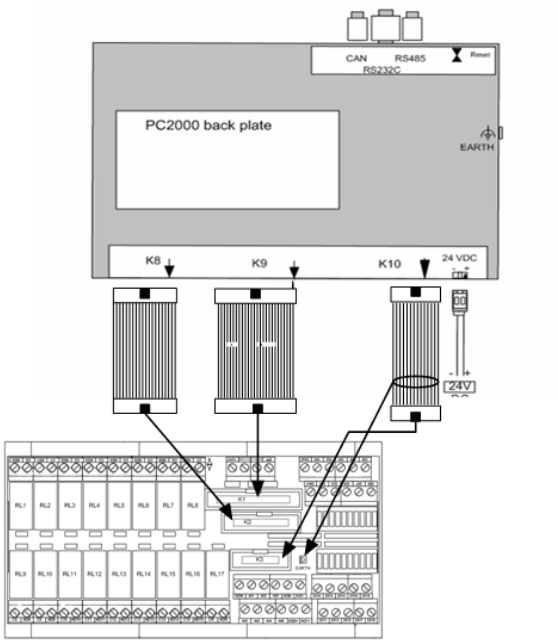
Below is explained how these cables are connected to the units and the signals.

-Band cable CSD20/1.5m is connected between **K2** on ADA-2000-E and **K8** on PC-2000-W, this cable is used for the digital outputs 12 to 16 and for the digital inputs 11 to 20.

-Band cable CSD26/1.5m is connected between **K1** on ADA-2000-E and **K9** on PC-2000-W, this cable is used for digital outputs 1 to 11 and digital inputs 1 to 10, and digital pulse counters 1 and 2.

-The screened round band cable CSA14E/1.5 m is connected between **K3** on ADA-2000-E and **K10** on PC-2000-W. The ground wire of the cable shall be connected to the earth terminals on ADA-2000-E and PC-2000-W. The cable is used for the analogue inputs 1 to 7 and the analogue outputs 1and 2.

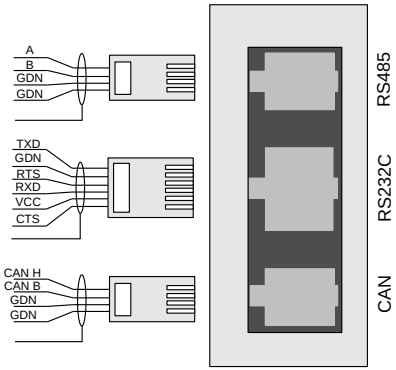
Picture 4.2 Shows how the signal the cables are connected between the PC-2000-W and the ADA-2000-E.The screened analogue signal cable has it´s own separate ground wire which connects the front panel mounted PC-2000-W to the ground.



5 Communication with PC-2000-W

5.1 Communication ports

The pump controller PC-2000-W has three communication ports. The RS232 port which is used for communication with GSM/SMS modems or for communication with SCADA-systems, The RS485 port is used for serial communication with other PC-2000-W or other type of controllers and instrumentation. The unit has a CAN-bus which is not used at present.

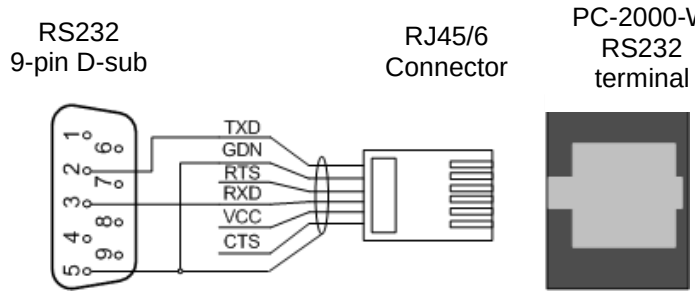


Picture 5.1
Shows the three communication ports with signal connections.

CAN-bus not used

5.2 RS232. Direct serial communication to a computer.

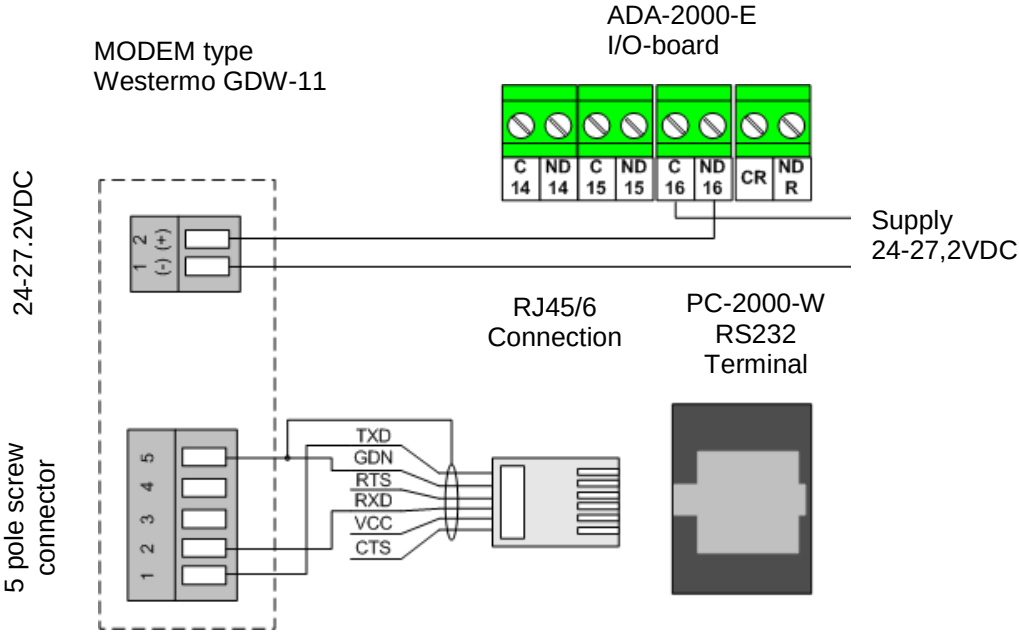
The PC-2000-W can be directly connected to a PC computer via a 9 pin D-sub connector to RS232-terminal on PC-2000-W. This connection is made as shown below and can be is used with the DripDrop configuration software PC-COM.



Picture 5.2 Connection to a PC computer with 9 pin D-sub connector.

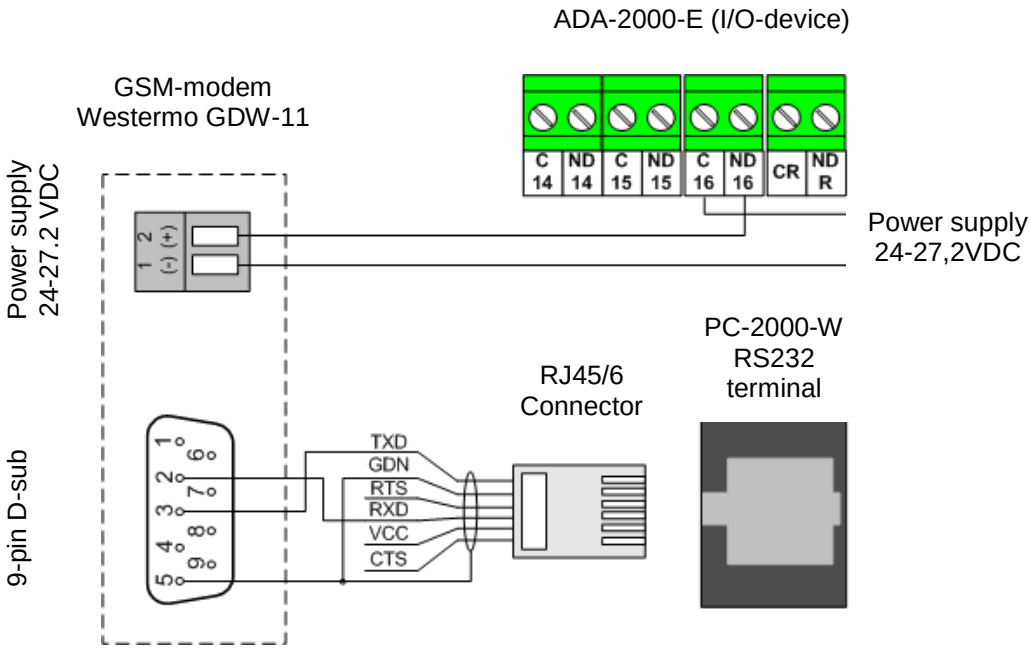
5.3 RS232. Modem communication with GSM, GDW-11.

Below you see how a Westermo GDW-11 GSM modem is connected for GSM communication and SMS sending. Note that the digital output number 16 is used as modem control to restart the modem via the PC-2000-W. Below you see the connections between the PC-2000-W RS232 connectors and the terminals of the modem.



Terminal	Signal	Description
No 1	In	TXD
No 2	Out	RXD
No 5	-	Signal earth (GND)

Picture 5.3 Signal configuration on the terminals of Westermo GSM-modem type GDW-11.



Picture 5.4 Shows the connection to a Westermo GDW-11 modem with a 9 pole D-sub contact.

D-sub	Signal	Description
No 2	Out	RXD
No 3	In	TXD
No 5	-	Signal earth

Table of D-sub signals to a Westermo GDW-11 GSM-modem.

6 Technical specification PC-2000-W

Power supply	24 VDC (19,2 -30 VDC)
Power consumption	150 mA
Mounting cut	Panel mounted (203,5mm x 115,5mm)
Dimensions	213 x 125 x 54mm (W x H x D)
Temperature range	-5 to +55 °C
Housing	IP 54 (IP65 from front)
Weight	0,6 kg
Processor	ATMEL ATMEGA 128
Memory	SRAM, EEPROM, FEPROM
Graphic display	128x 64 dots
Operator keys	12
LED´s	1 green , 1 yellow and 2 red
Internal battery (Litium)	CdLi, for real time clock and settings
Signal connection	Band cable 1x26, and 1x 14

I/O-interface

Digital outputs (16)	16 DO, 24VDC, open collector output Max. load 50mA at 30 VDC.
Digital inputs (20)	20 DI, 24VDC, opto isolated max. 500 V (1 min)
Counters (2)	2 CI, 24VDC, Opto isolated max.500V(1 min) Max. frequency 500 Hz
Analogue inputs (7)	7 AI, 0/4-20mA , 24VDC (max. impedance 100 ohm)
Analogue current outputs (1)	1 AO, 4-20mA , 24VDC (max. load 500 ohm)
Analogue voltage outputs (1)	1 AO, 0-10V (min. load 1000 ohm)

Communication ports

RS-232 (1)	1 port, 57600 Baud
RS-485 (1)	1 port, 57600 Baud

7 EMC – Electromagnetic compatibility

Electromagnetic compatibility (EMC)						
	Description	Standard	Class	Level	Notes	Test
1	Network frequency magnetic field	EN 61000-4-8		30A/m		A
2	Immunity to radiated RF--fields	EN 61000-4-3	3	10V/m	26MHz-1GHz	A
3	Electrostatic discharge immunity	EN 61000-4-2	4	± 8kV	Air discharge	C
				± 4kV	Contact discharge	C
4	Radiated emission	EN 52022:2004	A		26MHz-1GHz	A

8 Accessories and part numbers

Description	**Part number**	**Comments**
OPI and CPU type PC-2000-W	20101-03-101	
I/O unit type ADA-2000-E	20101-03-110	
Band cable screened CSA14E/1,5 m	20101-03-120	
Band cable flat CSD20/1,5 m	20101-03-130	
Band cable flat CSD26/1,5 m	20101-03-140	
Level sensor SP-25 (0-1m Wg)	40101-06-103	4-20mA
Level sensor SP-25 (0-4m Wg)	40101-06-102	4-20mA
Level sensor SP-25 (0-5m Wg)	40101-06-106	4-20mA
Level sensor SP-25 (0-10m Wg)	40101-06-101	4-20mA
Current transformer E83-2050 (0-50A)	40101-54-104	4-20mA
RS-232 cable, 2.0 m	30501-20-100	
Modem protection EDL170	20101-92-102	
Over voltage protection ED4000-230	20101-92-103	
Batteries, 1.3 Ah 12 VDC (2 are needed)	50101-127-101	
Power supply DRAN60-24V (24-28VDC)	50101-47-101	

9 Packing contents

The packing box contains:
1(one) Operator unit PC-2000-W
2(two) sets of mounting brackets with 4(four) screws
1(one) 2-pole contact for power supply, 24VDC